DE HAVILLAND DRAGON RAPIDE

Marks 2 and 3

MARCH 1946

THE DE HAVILLAND DRAGON RAPIDE

Two standard passenger versions in early post-war production

April 1946

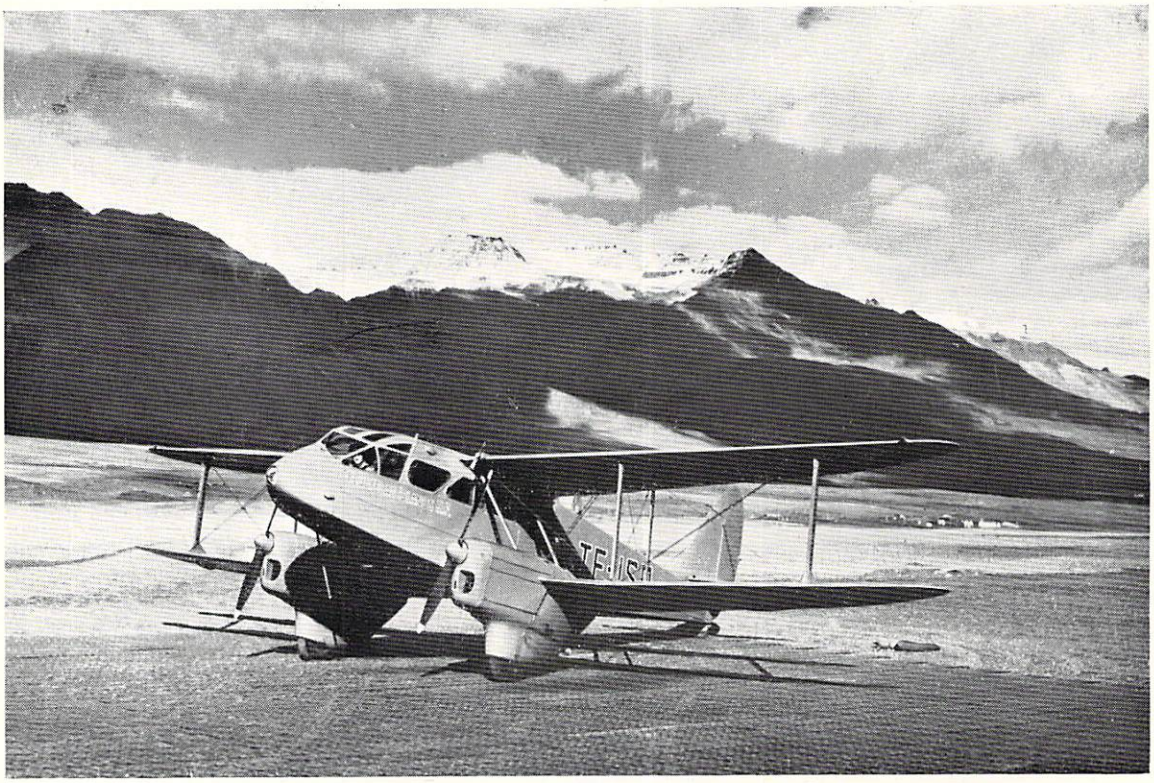
The de Havilland Aircraft Co. Ltd.
Hatfield, Hertfordshire, England
Associated Companies in Australia, Canada, India, Africa, New Zealand

DH AIRCRAFT

DH ENGINES

P.D. PLANS,
ROOM 372,
ST. GILES COURT.

One of the Dragon Rapides supplied to the Royal Dutch Air Lines (K.L.M.) in 1945 to serve the early period of reconstruction



One of the Dragon Rapides supplied to Iceland Airways during the war, for internal services

THE DE HAVILLAND DRAGON RAPIDE

MARK 2 and MARK 3

Throughout the war the Dragon Rapide was manufactured under the type name Dominie to serve the Royal Air Force as a wireless trainer and communications aircraft.

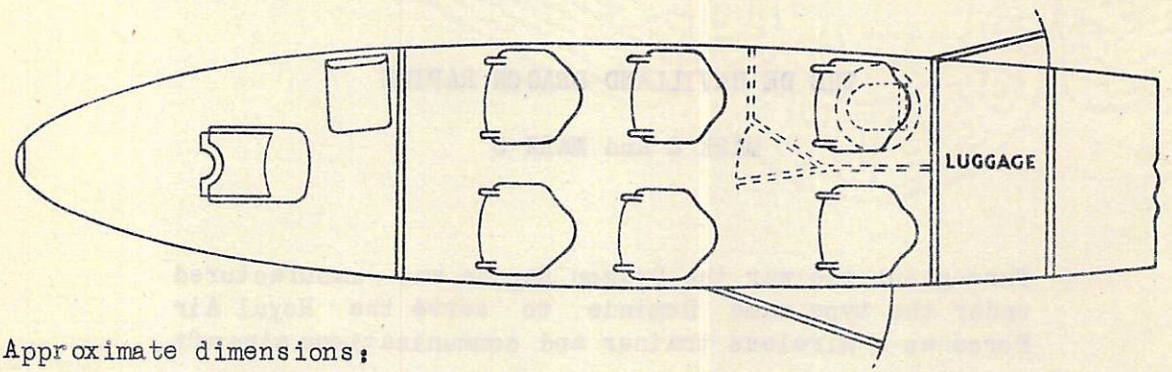
Production has been continued without break and so provides, during the early post-war period, new aircraft which are urgently needed by civil operators for the lighter transport duties. The aircraft are being completed to civil requirements at the de Havilland factories. Interior appointments of the two models offered are of high quality, although some small items of the general finish of the aircraft have not quite the refinement of normal peace-time production. All features affecting airworthiness and serviceability are of course to the highest standards, and the specification is comprehensive. Power units are the de Havilland Gipsy Queen III engines as standardised in R.A.F. service. These have a take-off power of 200 b.h.p. and are fitted with fixed-pitch metal propellers. The approved period between major engine overhauls is 720 hours.

Two cabin arrangements are available, the Mark 2 for five or six passengers and a crew of two, and the Mark 3 for seven or eight passengers and a pilot.

THE DE HAVILLAND DRAGON RAPIDE, MKS. 2 AND 3

CABIN ARRANGEMENTS

MARK 2

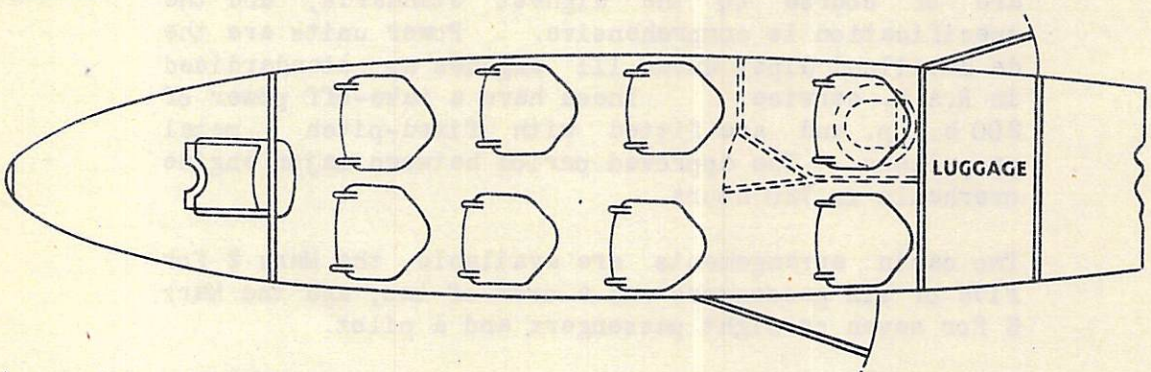


Approximate dimensions:

Cabin	Toilet	Luggage
10 ft. x 4 ft. 6 in. high x 4 ft. wide		
3,1 m. x 1,4 m. x 1,2 m.		
180 cubic ft., 5,1 m^3	23 cubic ft.	27 cubic ft.
	0,65 m^3	0,76 m^3

The Mark 2 arrangement accommodates the pilot and radio operator in one compartment. There are six passenger seats, one of which can be quickly replaced by a toilet compartment supplied with the aircraft. All seats are quickly detachable.

MARK 3

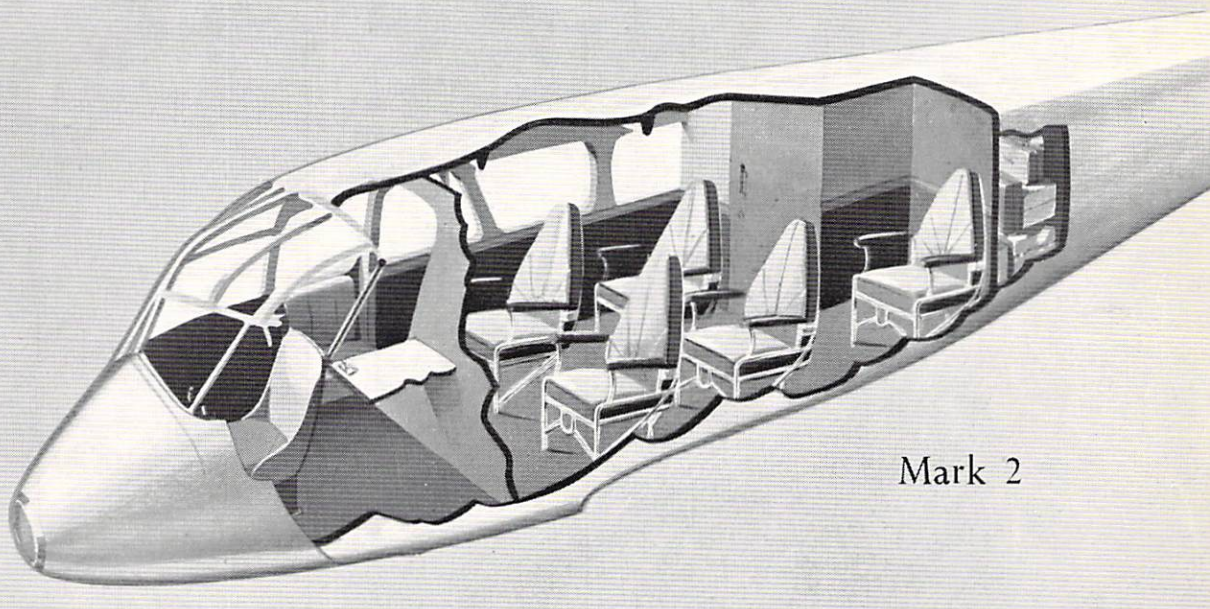


Approximate dimensions:

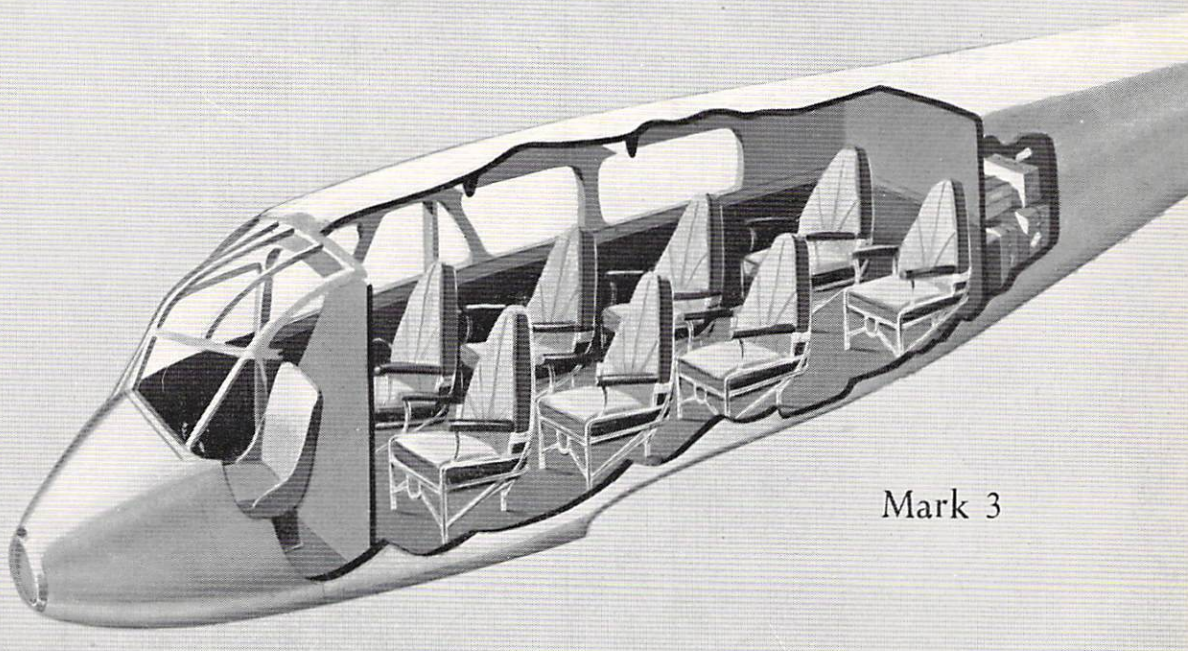
Cabin	Toilet	Luggage
12 ft. x 4 ft. 6 in. high x 4 ft. wide		
3,7 m. x 1,4 m. x 1,2 m.		
216 cubic ft., 6,1 m^3	23 cubic ft.	27 cubic ft.
	0,65 m^3	0,76 m^3

The Mark 3 arrangement has a smaller forward compartment, housing the pilot alone. There are eight passenger seats, one of which can be quickly replaced by a toilet compartment supplied with the aircraft. All seats are quickly detachable.

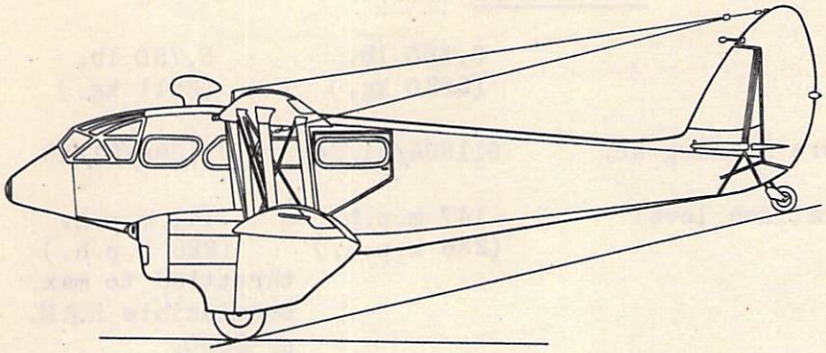
CABIN ARRANGEMENT

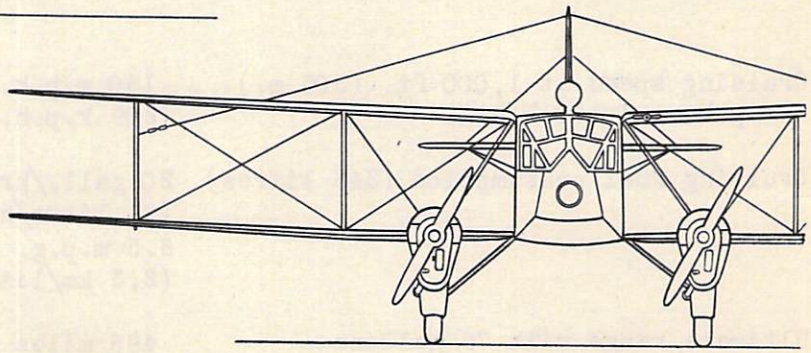


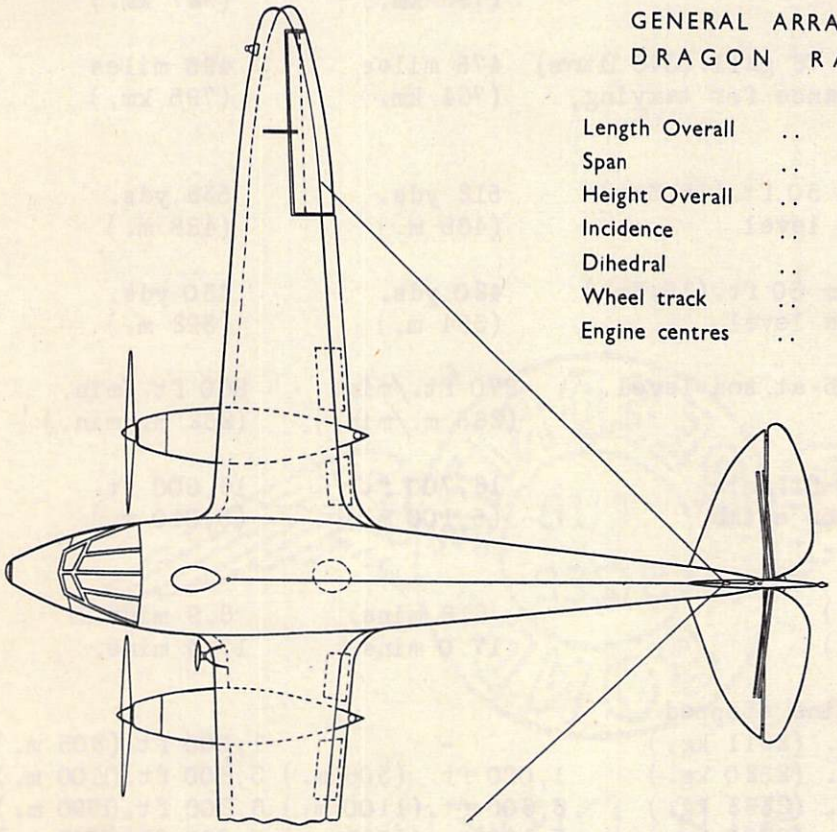
Mark 2



Mark 3







GENERAL ARRANGEMENT OF THE DRAGON RAPIDE (D.H.89A)

Length Overall	..	34 ft. 6 in.	..	10,52 m.
Span	..	48 ft. 0 in.	..	14,63 m.
Height Overall	..	10 ft. 3 in.	..	3,3 m.
Incidence	..	3°		
Dihedral	..	3°		
Wheel track	..	11 ft. 6 in.	..	3,5 m.
Engine centres	..	11 ft. 6 in.	..	3,5 m.

THE DE HAVILLAND DRAGON RAPIDE, MKS. 2 AND 3

PERFORMANCE

All-up Weight	5,550 lb. (2520 kg.)	5,750 lb. (2611 kg.)
Fairey Reed Propellers Drawing No.	61186A/21/X4	61186A/21/X9
Maximum level speed at sea level	147 m.p.h. (236 k.p.h.)	141 m.p.h. (226 k.p.h.) throttled to max. permissible R.P.M. of 2350.
Cruising speed at 1,000 ft. (305 m.) m.p.h.at 2,100 R.P.M.	130 m.p.h. (209 k.p.h.)	123 m.p.h. (198 k.p.h.)
Cruising fuel consumption (346 litres)	20 gall./hr. (91 litre/hr.) 6.5 m.p.g. (2,3 km/litre)	18 gall./hr. (82 litre/hr.) 6.8.m.p.g. (2,4 km/litre)
Ultimate range with 76 gallons (tankage x m.p.g.)	495 miles (795 km.)	515 miles (827 km.)
Still-air range with 76 gall.(346 litres) (includes an allowance for taxying, take-off, etc.)	475 miles (764 km.)	495 miles (795 km.)
Take-off distance to 50 ft.(15,3m.) in still air at sea level	512 yds. (468 m.)	535 yds. (488 m.)
Landing distance from 50 ft.(15,3m.) in still air at sea level	420 yds. (384 m.)	430 yds. (392 m.)
Initial rate of climb at sea level	870 ft./min. (265 m./min.)	860 ft./min. (262 m./min.)
Service ceiling (100 ft./min. 30,5 m./min. rate of climb)	16,700 ft. (5,100 m.)	16,500 ft. (5,040 m.)
Time to climb to 5,000 ft. (1525 m.)	6.8 mins.	6.9 mins.
10,000 ft. (3050 m.)	17.0 mins.	17.3 mins.

Ceiling with one engine stopped

5,750 lb. (2611 kg.)	-	1,000 ft.(305 m.)
5,550 lb. (2520 kg.)	1,000 ft. (305 m.)	3,600 ft.(1100 m.)
5,250 lb. (2383 kg.)	3,600 ft.(1100 m.)	6,200 ft.(1890 m.)
5,000 lb. (2270 kg.)	5,100 ft.(1555 m.)	7,700 ft.(2349 m.)
4,500 lb. (2043 kg.)	7,200 ft.(2195 m.)	9,800 ft.(2980 m.)

W E I G H T S

	Mark 2 lb.	Mark 2 kg.	Mark 3 lb.	Mark 3 kg.
Tare weight of aircraft without passenger chairs but otherwise in standard flying trim:	3,555	1614	3,520	1599
Disposable load:	1,995	906	2,030	921
All-up weight: (Normal British Certificate of Airworthiness.)	5,550	2520	5,550	2520

NOTE: The C. of A. all-up weight may be increased to 5,750 lb. (2611 kg.) provided that propellers to Drawing No. 61186A/21/X9 are fitted. The payload is then increased by 200 lb., 91 kg.

The disposable load comprises the following items:-

	lb.	kg.
Pilot	170	77
Radio operator, if required	170	77
Fuel (standard capacity 76 gallons, 346 litres)	550	250
Oil (standard capacity 8½ gallons, 39 litres)	76	34,5
Passenger chairs, each	13	5,9
Toilet compartment	45	20,5
Radio: AD 41/50 or	125	57
AD 87/8882	195	88,5
Standard Blind Approach (if fitted)	68	31
Payload	The	Balance

S P E C I F I C A T I O N

DE HAVILLAND DRAGON RAPIDE MARKS 2 AND 3

ENGINES

2 Gipsy Queen III, fitted with electric starter and fully screened for radio.

INSTRUMENTS

1 Airspeed indicator with electrically heated pitot head.
1 Sensitive altimeter 0-20,000 ft.
1 Sperry Horizon (Exhaust venturi and
1 Sperry Directional Gyro (induction drive.
(Automatic operation.
1 Vacuum gauge
1 Turn and bank indicator
1 Rate of climb indicator
2 Oil pressure gauges 0-100 lb. sq. inch
2 Oil temperature gauges
2 B.T.H. engine revolution indicators
1 Fuel contents gauge
1 Compass
1 Drift indicator
1 Clock

All instruments in English calibration.

STANDARD SPECIFICATION AND EQUIPMENT

Landing flaps with cockpit control lever
Fixed-pitch metal propellers
Wheel brakes
Medium-pressure tyres
Dual-purpose Marconi wind driven generator mounted in leading edge of top wing giving supply for all electrical services with 12 v. 40 amp.-hr. storage battery.
Windscreen wiper
Structural provision only to allow for fitment of two 18-gallon (82-litre) auxiliary petrol tanks in cabin.
Two $4\frac{1}{4}$-gallon (19,5-litre) oil tanks
Wing-tip navigation lights
Fixed nose landing light
Downward recognition lamp with switch in cockpit
Spotlights with dimmer controls for instrument boards (Mk. 2 and Mk. 3) and for radio (Mk. 2).
Safety-glass front windows and side sliding windows to cockpit

Cabin and toilet ventilators
Cockpit ventilators
Cabin warm-air supply with control in cockpit
Cabin door fitted with sliding window and lock
Rear luggage compartment with external loading door fitted with mortice locks.
Sunblind for cockpit roof
Fire extinguishers in cabin cockpit (manually operated).
First Aid pack stowed in roof of luggage compartment with access from exterior of aircraft and interior of cabin.
Emergency exit in cabin roof and rip panel in cockpit roof
Verey pistol and stowage for cartridges in cockpit

Labels worded in English.

LOOSE EQUIPMENT

Fireman's axe
Control locking device
Dipstick
Step ladder
Tool roll
Engine and cockpit covers

EXTERIOR COLOUR SCHEME

All silver unless otherwise requested

CABIN FURNISHING

Cabin walls sound-insulated and lined, below windows, with grey leather. Lining of ceiling and walls above windows is grey cloth. Cabin bulkheads are upholstered in grey leather and a grey floor carpet is supplied. Roof lights are flush fitting. Cloth curtains are provided for the cabin windows. Six grey leather upholstered seats each with a life-belt container are fitted in the Mark 2 cabin, and eight similar seats in the Mark 3 as shown in the furnishing plans. All seats are quickly detachable.

THE DE HAVILLAND DRAGON RAPIDE MKS. 2 AND 3

TOILET COMPARTMENT

Alternative to starboard rear cabin seat. Easily removable partitions and doorway upholstered in grey leather. Elsan closet and usual toilet fittings. Floor clips for seat secure Elsan closet base without alteration. Linoleum is fitted under the removable carpet and a separate roof light and switch are provided.

RADIO COMPARTMENT MARK 2 ONLY

Upholstered folding seat with safety belt. Folding table with Morse key. Leather pocket for equipment. Stowage for headphones.

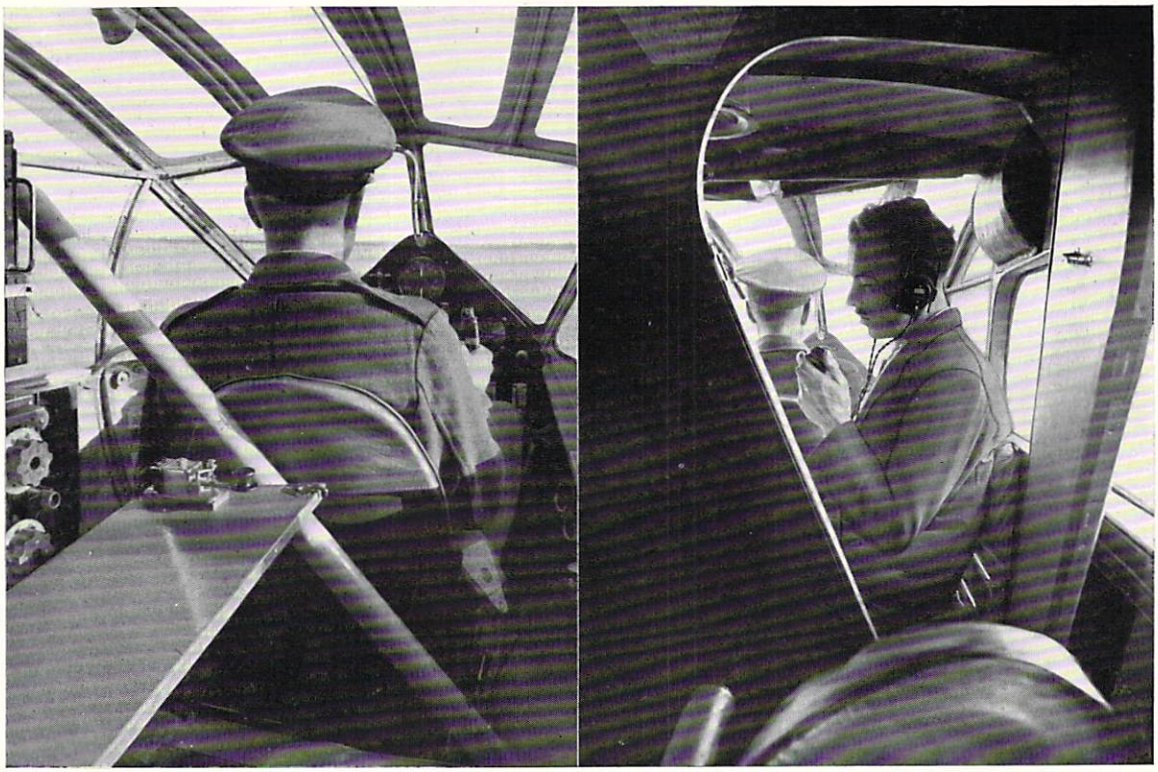
RADIO

Aircraft is fully bonded and screened for radio. Provision is made for radio equipment, which can be supplied and fitted at an extra charge. The Dragon Rapide Mark 2 has provision for any of the following combinations of radio equipment:-

Scheme A AD 41/50 with Standard Blind Approach.
Scheme B AD 41/50 without Standard Blind Approach.
Scheme C AD 87/8882 with Standard Blind Approach.
Scheme D AD 87/8882 without Standard Blind Approach.

The Dragon Rapide Mark 3 has provision for any of the above except Scheme C.

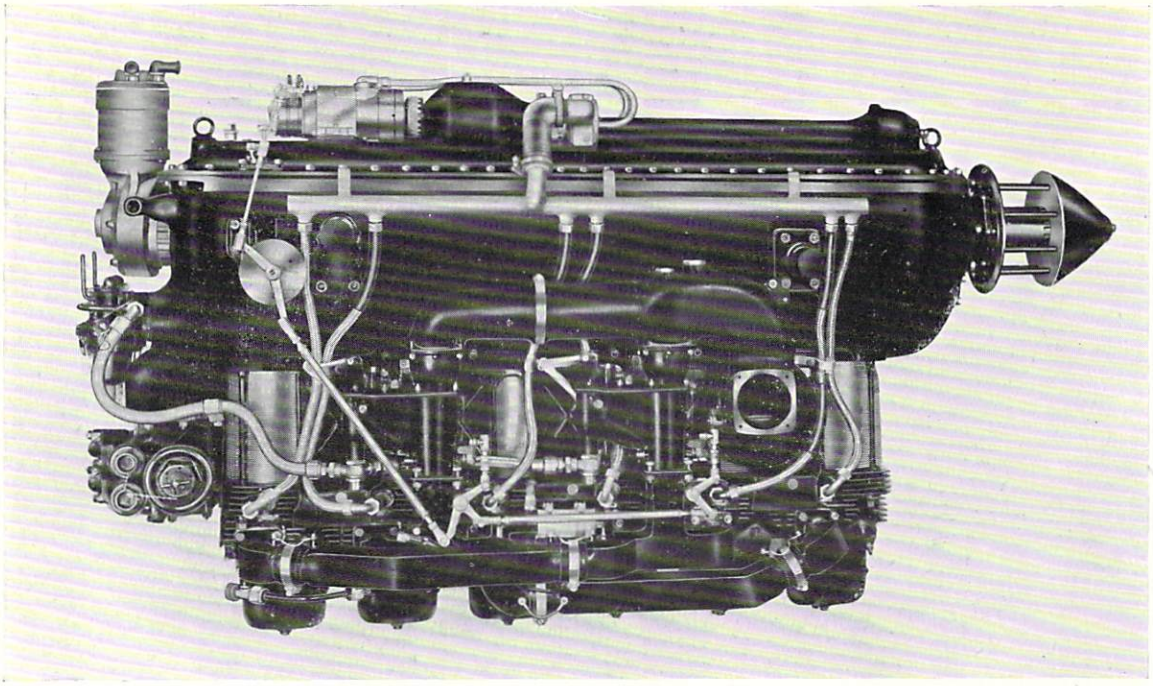
For full details of radio equipment see following pages.



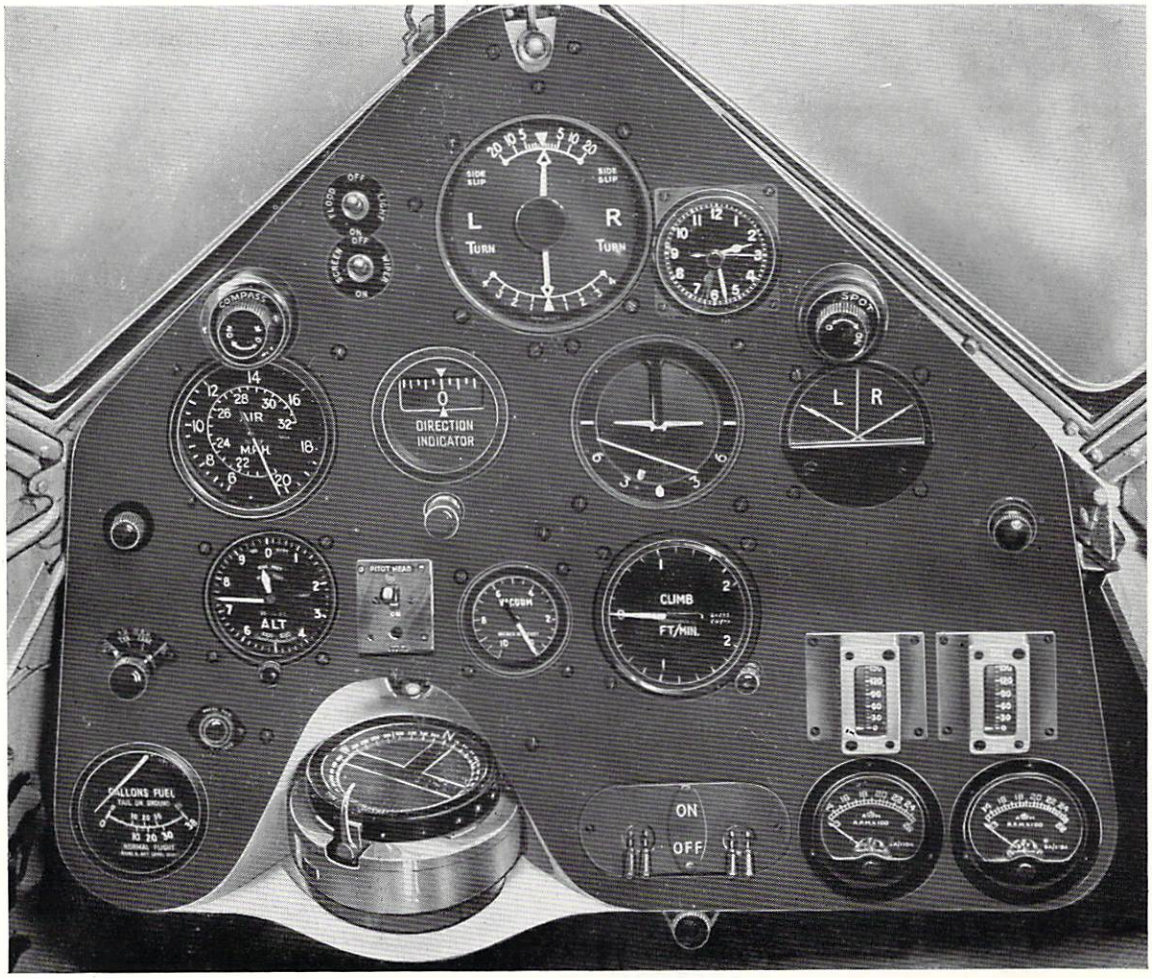
Dragon Rapide Mk. 2: Two views of the crew compartment

Dragon Rapide Mk. 2 and 3:
Luggage compartment

Dragon Rapide Mk. 2 and 3:
The loading of stretcher cases



The de Havilland Gipsy Queen III six-cylinder in-line air-cooled engine



Dragon Rapide Mk. 2 and 3: Instrument panel with radio visual homing indicator fitted

R A D I O

INSTALLATIONS AVAILABLE

The Dragon Rapide Mark 2 has provision for any of the following combinations of radio equipment:-

Scheme A AD 41/50 with Standard Blind Approach
Scheme B AD 41/50 without Standard Blind Approach
Scheme C AD 87/8882 with Standard Blind Approach
Scheme D AD 87/8882 without Standard Blind Approach

The Dragon Rapide Mark 3 has provision for any of the above except Scheme C.

DESCRIPTION

TRANSMITTER Type AD 41 (Marconi's Wireless Telegraph Co. Ltd.)

A medium-powered transmitter suitable for communication on CW, MCW and telephony which can be directly or remotely controlled. Remote controls are provided as standard equipment in the Dragon Rapide Mark 3 but not in the Mark 2.

Frequency range 600 - 300 kilocycles (500 - 1000 metres)

Working range

The following are approximately maximum distances obtained with the trailing aerial:-

Air to ground Telephony 150 - 200 miles (240 - 320 km)
" " " ICW telegraphy 200 - 250 miles (320 - 400 km)
" " " CW telegraphy 250 - 350 miles (400 - 560 km)

Using the fixed aerial, the ranges are approximately one-third of the above.

Power supply

H.T. for the transmitter is obtained from a Marconi-Newton AD/U type dual-purpose, wind-driven generator which also provides adequate controllable charging facilities.

Output rating

On CW telegraphy, 50 watts under maximum working conditions.

THE DE HAVILLAND DRAGON RAPIDE, MKS. 2 AND 3

Dimensions and weight

Height	Width	Depth	Weight
13 in.	14.25 in.	8.75 in.	26 lb. 12 kg.

RECEIVER Type AD50 (Marconi's Wireless Telegraph Co. Ltd.

A compact receiver suitable for use with the AD 41 type transmitter. No remote controls are provided, but the dimensions of the receiver allow suitable positioning for operator and/or pilot control.

Frequency range 545 - 250 kilocycles (550 - 1200 metres)
260 - 187 kilocycles (1150 - 1600 metres)

Power supply

When used in conjunction with the AD 41 transmitter, the H.T. supply is obtained from an Anode Converter type H550C.

Dimensions and weight

Height	Width	Depth	Weight
4.5 in.	11.5 in.	7.25 in.	7.5 lb. 3.4 kg.

Approximate weight of AD 41/50 installations: 125 lb. 57 kg. (This includes the transmitter, receiver, power supply and all accessories and fittings.)

TRANSMITTER Type AD 87 (Marconi's Wireless Telegraph Co. Ltd.)

A medium-powered transmitter suitable for communication on CW, MCW and telephony directly controlled by a radio operator. For aerodrome approach purposes, however, it is possible for the pilot to receive and transmit on a pre-determined telephony frequency, using the two-way switch installed on the control column.

Frequency range 10 - 3 megacycles (30 - 100 metres)
500 - 2000 kilocycles (500 -1500 metres)

Working ranges

Under normal conditions, and assuming that the installation of the ground station is of modern design, the approximate ranges obtainable on medium frequencies using the trailing aerial are:-

Air to ground	Telephone	150 - 200 miles (240 - 320 km)
" " "	MCW telegraphy	200 - 250 miles (320 - 400 km)
" " "	CW telegraphy	250 - 350 miles (400 - 560 km)

Using the fixed aerial, the ranges are approximately one-third of the above.

When using high frequencies, the range obtainable depends so much on local conditions, time of day or night, and season of the year etc., that no firm figures can be given.

Power supply

H.T. for the transmitter is obtained from a Marconi-Newton AD/U type dual purpose, wind-driven generator which provided 1,000 volts at 150 milliamperes and a charging rate of 16.5 volts at 20 amperes via a type 604A chargin boarding for the 12-volt aircraft battery.

Output rating

The power output on CW telegraphy is 40 to 50 watts, which can be reduced to 20 watts for short-range workings. Power output on telephony is approximately 20 to 25 watts.

Dimensions and weight

Height	Width	Depth	Weight
15.75 in.	16.75 in.	11 in.	46 lb. 21 kg.

RECEIVER Type AD 8882 (Marconi's Wireless Telegraph Co. Ltd.)

A nine-valve, all-wave, superheterodyne receiver which provides for the reception of telephony, CW and MCW telegraphy, also aural and visual direction finding and homing on the medium frequency ranges if required. The direction finding and homing facilities are used in conjunction with an Air Ministry Mark IV streamlined loop aerial.

Power supply

Power for the receiver is derived from the 12-volt aircraft battery through an anode converter type H550G, which provides 225 volts at 70 milliamperes.

Dimensions and weight

Height	Width	Depth	Weight
10 in.	16.5 in.	11.5 in.	25 lb. 11.4 kg.

Approximate weight of AD 87/8882 installation 195 lb. 88.5 kg. (This includes the transmitter, receiver, power supply and all accessories and fittings.)

STANDARD BLIND APPROACH

In conditions of poor visibility, the pilot of an aeroplane fitted with this equipment is able to take the correct apprcach track to an aerodrome equipped with the Blind Approach beacon.

THE DE HAVILLAND DRAGON RAPIDE, MKS. 2 AND 3

In addition to course indication provision is made for reception, at two fixed positions during the approach, of marker beacon signals indicating the distance of the aeroplane from the aerodrome boundary.

Receiving Equipment

1. A six valve superheterodyne main beacon receiver with a frequency range of 30.5 - 40.4 megacycles.

2. A marker beacon receiver pretuned to a fixed frequency of 38 megacycles.

3. A dual purpose rotary transformer using current from the aircraft battery provides L.T. and H.T. to both receivers.

4. A remote control unit and mechanism, junction box, visual indicator, vertical aerial, horizontal dipole aerial and connection cables.

Power consumption

Using a 12 volt battery the power consumption is approximately 85 watts.

Dimensions and weight

Height	Width	Depth	Weight
12.5 in.	19 in.	13 in.	68 lb. 31 kg.

THE GIPSY QUEEN III ENGINE

The Gipsy Queen III, which is almost identical to the Gipsy Six I, is fitted as standard. The differences are only in detail, the change of name having been made by the Air Ministry to refer to this engine when fitted in the Royal Air Force Dominie.

ENGINE DATA

Hours between major overhauls:	720
Type:	Six-cylinder, in-line inverted, air-cooled, direct drive, dry sump.
Bore:	118 mm. 4.643 ins.
Stroke:	140 mm. 5.512 ins.
Swept volume:	9.186 litres 560.6 cub. in.
Comp. ratio:	5.25 to 1
Direction of rotation:	Left-hand
Weight (nett dry)	471 ± 5½ lb. (214 ± 2.5 kg.) less propeller, hub and starter.

PERFORMANCE

International power rating:	180/185 b.h.p. at 2,100 R.P.M. at sea level full throttle.
Max. power rating:	198/203 b.h.p. at 2,350 R.P.M. and full throttle.
Max. take-off power:	180/185 b.h.p. at 2,100 R.P.M. and full throttle.
Min. take-off power:	170 b.h.p. at 1,900 R.P.M. and full throttle.

LIMITING OPERATIONAL CONDITIONS

Max. take-off R.P.M.	2,100
Min. take-off R.P.M.	1,900
Cylinder temperature:	230°C.

MAXIMUM CLIMBING (30 minutes limit)

R.P.M.	2,100
Cylinder temperature	230°C.

MAXIMUM LEVEL FLIGHT (5 minutes limit)

R.P.M.	2,350
Cylinder temperature	240°C.

MAXIMUM EMERGENCY CRUISING

(One engine stopped, multi-engined aircraft 20 minutes limitation) R.P.M.	2,100
Cylinder temperature	230°C.

FUEL

Type	Any fuel of not less than 70 octane and not having more than 4 cc. T.E.L. per gallon can be used.

CONSUMPTION PER ENGINE

(1) At maximum take-off conditions at sea level (185 b.p.h. at 2,100. R.P.M. with the mixture control in the normal rich position.)	14½ gallons per hour. 66 litres per hour.
(2) At maximum climbing conditions near sea level (185 b.h.p. at 2100 R.P.M. with the mixture control in the normal rich position.)	14½ gallons per hour. 66 litres per hour.
(3) Cruising near sea level (approximately 150 b.h.p. at 2,100 R.P.M. with mixture control adjusted to give weakest mixture for maximum power.)	9 gallons per hour. 41 litres per hour.

OIL

Type	Specification DED 2472B
Oil pressure normal.	65-70 lb./sq.in. 4,5 - 4,9 kg./sq.cm.
Emergency min.	30 lb./sq.in. 2,1 kg./sq.cm.
Consumption at maximum cruising	1-4 pints per hour. 0,6 - 2,3 litres per hour.
Inlet temperature minimum	30°C
Normal	70°C

D O C U M E N T S

To facilitate the issue of documents necessary to the sale and registration of an aeroplane the following information should be provided with the confirmation of the order:

1. Full name of purchaser.
2. Full address of purchaser.
3. Details for nameplate if differing from the above.
4. Usual station of aircraft
5. Exterior colour scheme.
6. Registration letters allocated.
7. Number of Import Licence.

Standard Packing Scheme for Shipment

The aircraft is packed in five cases:-

Contents of case	Gross Weight of case	Dimensions of case	Volume of case
		English Measurements (Approximate)	
Fuselage	6,160 lb.	33 ft. x 6 ft. x 6 ft. 8 in.	1,320.0 cu. ft.
Wings	2,016 lb.	22 ft.4 in. x 1 ft. 7 in. x 6 ft.11 in.	244.5 cu. ft.
Stub Wings	2,954 lb.	14 ft.10 ins. x 8 ft. 11 in x 5 ft. 4 in.	705.4 cu. ft.
Engine	760	5 ft. 9 in. x 2 ft. 4 in. x 3 ft. 5 in.	45.8 cu. ft.
Engine	760	5 ft. 9 in. x 2 ft. 4 in. x 3 ft. 5 in.	45.8 cu. ft.
		Metric Measurements (Approximate)	
Fuselage	2794 kg	10,03 m. x 1,83 m. x 2,03 m.	37,4 m^3
Wings	914 kg.	6,79 m. x 0,48 m. x 2,11m.	6,9 m^3
Stub Wings	1340 kg.	4,52 m. x 2,72 m. x 1,62 m.	20,0 m^3
Engine	345	1,75 m. x 0,71 m. x 1,04 m.	1,3 m^3
Engine	345	1,75 m. x 0,71 m. x 1,04 m.	1,3 m^3